

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

Robyn Joyce RUSSELL, et al.

Serial No.:

(Divisional of Serial No. 09/068,960)

Group Art Unit:

Filed: February 6, 2001

Examiner:

For: MALATHION CARBOXYLESTERASE

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, DC 20231

Sir:

This is a Preliminary Amendment for the above-referenced application.

**IN THE SPECIFICATION:**

Page 5, line 11, change "Figure 1 shows" to --Figures 1A to 1H show--;

line 20, change "Figure 2 shows" to --Figures 2A and 2B show--;

line 26, change "Figure 3 shows" to --Figures 3A to 3E show--.

Page 10, line 20, change "Figure 1 shows" to --Figures 1A to 1H show--.

Page 10, Table 1, first column, please insert the following sequence identifiers after the nucleotide sequences:

Row 2, --(SEQ ID NO:16)--  
Row 3, --(SEQ ID NO:17)--  
Row 4, --(SEQ ID NO:18)--  
Row 5, --(SEQ ID NO:19)--  
Row 6, --(SEQ ID NO:20)--  
Row 7, --(SEQ ID NO:21)--  
Row 8, --(SEQ ID NO:22)--  
Row 9, --(SEQ ID NO:23)--  
Row 10, --(SEQ ID NO:24)--  
Row 11, --(SEQ ID NO:25)--  
Row 12, --(SEQ ID NO:26)--  
Row 13, --(SEQ ID NO:27)--

Page 10, in Table 1, third column, line 3, after "246" insert --(SEQ ID NO:16)- -;

line 4, after "464" insert --(SEQ ID NO:17)--;

line 5, after "723" insert --(SEQ ID NO:18)--;

line 6, after "1026" insert --(SEQ ID NO:19)- -;

line 7, after "1203" insert --(SEQ ID NO:20)- -;

line 8, after "1467" insert --(SEQ ID NO:21)- -;

line 9, after "187" insert --(SEQ ID NO:22)--;

line 10, after "504" insert --(SEQ ID NO: 23)--;

line 11, after "685" insert --(SEQ ID NO:24)- -;

line 12, after "990" insert --(SEQ ID NO:25)--;

line 13, after "1231" insert --(SEQ ID NO:26)- -;

line 14, after "1476" insert --(SEQ ID NO:27)- -.

Page 11, line 29, change "Figure 1." to --Figures 1A to 1H.--.

Page 12, line 17, after the sequence "...cat 3')" insert --(SEQ ID NO:28)--;

line 18, after the sequence "...taa 3')" insert --(SEQ ID NO:29)--;

Page 14, line 12, after "3'" insert --(SEQ ID NO:30)--;

line 15, after "3'" insert --(SEQ ID NO:31)--.

Page 16, Table 4, second column, please insert the following sequence identifiers after the nucleotide sequences:

Row 3, --(SEQ ID NO:32)--

Row 4, --(SEQ ID NO:33)--

Row 5, --(SEQ ID NO:34)--

Row 6, --(SEQ ID NO:35)--

Row 7, --(SEQ ID NO:36)--

Row 8, --(SEQ ID NO:37)--

Row 9, --(SEQ ID NO:38)--

Row 10, --(SEQ ID NO:39)--

Row 11, --(SEQ ID NO:40)--

Row 12, --(SEQ ID NO:41)--

Row 13, --(SEQ ID NO:42)--

Page 16, Table 4, fourth column, third column, line 6, after “442” insert --(SEQ ID NO:32)-

line 7, after “310” insert --(SEQ ID NO:33)- -;

line 8, after “676” insert --(SEQ ID NO:34)--;

line 9, after “107” insert --(SEQ ID NO:35)--;

line 10, after “288” insert --(SEQ ID NO:36)- -;

line 11, after “913” insert --(SEQ ID NO:37)- -;

line 12, after “1016” insert - - (SEQ ID NO:38)- -;

line 13, after “1312” insert - -(SEQ ID NO:39)- -;

line 14, after 1” insert --(SEQ ID NO:40)--;

line 15, after “1710” insert - -(SEQ ID NO:41)- -;

line 16, after “1558” insert - -(SEQ ID NO:42)--.

#### IN THE CLAIMS:

Please cancel claims 1-8 and 12 without prejudice to the subject matter contained therein.

Please amend claims 9-11 and add new claims 13-29 as follows.

9. (Amended) An enzyme capable of [hydrolysing] hydrolyzing at least one organophosphate selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the enzyme being produced by a cell [as claimed in claim 7 or 8] transformed with a DNA molecule comprising a nucleotide sequence having at least 60% homology with LcαE7, in which the protein encoded by the DNA molecule differs from E3 at

least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

10. (Amended) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with an enzyme encoded by [the] a DNA molecule [as claimed in any one of claims 1 to 6] comprising a nucleotide sequence having at least 60% homology with LcαE7, in which the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

11. (Amended) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with a cell [as claimed in claim 7 or claim 8] transformed with a DNA molecule comprising a nucleotide sequence having at least 60% homology with LcαE7, in which the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

Please add new claims 13-29.

13. (New) The enzyme according to claim 9, wherein said cell is a prokaryotic cell or an insect cell.

14. (New) The enzyme according to claim 9, wherein said DNA molecule has at least 80% homology with the DNA encoding Lc $\alpha$ E7.

15. (New) The enzyme according to claim 9, wherein said DNA molecule has at least 95% homology with the DNA encoding Lc $\alpha$ E7.

16. (New) The enzyme according to claim 9, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

17. (New) The enzyme according to claim 9, wherein said Trp at position 251 is substituted with Leu or Ser.

18. (New) An enzyme capable of hydrolyzing at least one organophosphate selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the enzyme being produced by a cell transformed with a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of Md $\alpha$ E7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

19. (New) The method according to claim 10, wherein said DNA molecule has at least 80% homology with the DNA encoding LcαE7.

20. (New) The method according to claim 10, wherein said DNA molecule has at least 95% homology with the DNA encoding LcαE7.

21. (New) The method according to claim 10, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

22. (New) The method according to claim 10, wherein said Trp at position 251 is substituted with Leu or Ser.

23. (New) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with an enzyme encoded by a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of MdαE7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

24. (New) The method according to claim 11, wherein said cell is a prokaryotic cell or an insect cell.

25. (New) The method according to claim 11, wherein said DNA molecule has at least 80% homology with the DNA encoding Lc $\alpha$ E7.

26. (New) The method according to claim 11, wherein said DNA molecule has at least 95% homology with the DNA encoding Lc $\alpha$ E7.

27. (New) The method according to claim 11, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

28. (New) The method according to claim 11, wherein said Trp at position 251 is substituted with Leu or Ser.

29. (New) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with a cell transformed with a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of Md $\alpha$ E7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

REMARKS

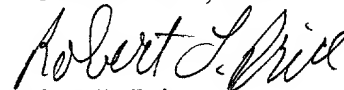
Claims 9-11 and 13-29 are pending in the application.

The amendments to the claims as well as newly added claims 13-29 serve to pursue subject matter not covered in the parent Application Serial No. 09/068,960, which is now allowed. The amendments to the claims render independent some of the dependent claims, and serve to further clarify the invention. Bases for the amendments to the claims and the newly added claims can found in the subject matter of the originally filed claims. Accordingly, no new subject matter has been inserted into the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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